CERS EDT Services Manual

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This is a technical manual intended for information technology professionals and others who have direct responsibility for implementing machine-to-machine, electronic data transfer (EDT) to the Cal/EPA Unified Program's California Environmental Reporting System (CERS2). This manual assumes the reader knowledgeable about Unified Program participants, mandates, forms (UPCFs), etc. Questions and suggestions should be referred to Chris Allen at callen@calepa.ca.gov.

> **Note**: Substantive additions/modifications to ==Version 0.9 are highlighted in green==, while those to ==Version 0.8 are highlighted in yellow==. Version 0.91 changes are **not** highlighted in anyway. A comprehensive update of this manual (Version 0.95) will be released in May/June 2012, but the fundamentals will all remain the same. The only significant EDT endpoint change is most or all "Library" endpoints (e.g., Violation/Chemical Libraries) **will** require HTTP header-based authentication instead of no authentication.

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Section 1: Introduction

The 2009 legislation requiring regulated business and Unified Program agencies to report program data electronically put in motion the development of the California Environmental Reporting System (CERS). In addition to providing a web-based user interface for businesses and regulators to access CERS, the legislation mandates electronic, machine-to-machine transfer of data using XML.

Implementing CERS EDT has proven to be a daunting task, both because of the legislative mandates and past agreements made by CUPA governance bodies, as well as the general complexity of the Unified Program-- multiple interrelated forms, some with supplemental documentation, spanning multiple programs and managed by multiple regulators using sometimes differing business processes. In particular, the need to support facility submittal data originating from three different locations (CERS web user interface, local regulator web portals, direct submission by multi-facility businesses) is a far more complex model than the typical one-way transmission of data from a lower ranking government entity to a higher one (e.g., local→state, state→federal).

Thus CERS EDT implementation is quite complex and implementers will need a strong technical background and should anticipate a non-trivial investment in time to implement the services. This manual provides the specific details on the "how" of using CERS EDT services—it generally skips explaining the "why" of design approaches. For additional information, please review the CERS EDT Home Page at http://cers.calepa.ca.gov/EDT/ or contact Cal/EPA's Technology Services Unit (TSU) staff.

CERS EDT in a Nutshell

Users (CUPAs/PAs or Organizations/Businesses) can gain authorization for production use of CERS EDT by completing Cal/EPA's data exchange agreement, establishing a CERS account dedicated to data exchanges for that regulator/organization, and completing successful test exchanges. Authorized EDT users communicate to SSL-secured, REST-based endpoints using HTTP messages consisting of an authentication header and either an XML or ZIP document. ZIP document-based submissions accommodate sending document attachments or submissions with an extensive amount of data. All EDT data submissions to CERS include an XML document with data rigorously formatted using Cal/EPA-provided XML schemas.

If a **single** record in a CERS data submission generates any XML schema or business rule errors, the **entire** data submission (all records) is rejected. All CERS data submission endpoints return a schema-defined XML response about the success/status of the transaction and detailed error/advisory messages. While Cal/EPA's data submission schemas support submittal of multiple facility or CME submittals in a single transaction, CERS EDT services will normally only attempt to perform immediate processing on single/small submittals. CERS endpoints will defer processing of larger submittals, but return response data the user can use later to query CERS on the submittal's processing outcome.

The submission schemas provided by Cal/EPA express as many of the CERS data submission business rules as possible using XML schema (XSD) markup (i.e., hierarchical entities, data types, enumerations, choice sequences, and restriction patterns). However, some business rules involving multiple fields on the same form and/or field dependencies across forms will be expressed in documentation provided by Cal/EPA. It will be important for EDT

Additional REST endpoints are available to download/export previously submitted data and other CERS library/lookup data using Cal/EPA-provided XML schemas.

Typical CERS Data Exchange Scenarios

CERS was designed so California's 100+ CUPAs/PAs could interact with CERS and CERS EDT in several different ways to meet their local practices/needs. Listed below are the three UPA/CERS usage scenarios.

Scenario	Description	CERS EDT Data Flows
CERS-Only	• All regulated facilities are directed by their CUPA (and PAs) to always use Cal/EPA's CERS web portal for their facility reporting. • Regulators use the CERS web portal to review and act upon facility submittals, as well as manually enter (or upload via a specific MS Excel format) their inspections/violations/enforcements data. • Authorized CUPAs/PAs could choose to export/download data using the Regulator Facility Submittal Export and/or CME Submittals Export XML flows.	None
CERS + Local System	• All regulated facilities are directed by their CUPA (and PAs) to use Cal/EPA's CERS web portal for their facility reporting. • The regulator's local system **exports** facility submittal XML data from CERS into the regulator's local system via EDT. • Regulator staff review and act upon the submittals in their local system. • The local system submits review/status information via EDT Regulator Facility Submittal Action Notification XML transactions. Submittals for new facilities not in CERS (or non-substantive "corrections" of past submittals) can be submitted via Regulator Facility Submittal XML transactions. • Regulator staff enters their inspections, violations, and enforcements data (CME) into their local systems, and then the local system submits new and updated CME data using CME Submittal XML transactions via EDT*.	➢Regulator Facility Submittal Export (RFSE) ➢Regulator Facility Submittal (RFSI) ➢Regulator Facility Submittal Action Notification (RFSAN) ➢Regulator Facility Submittal Response (RFSR) ➢CME Submittal (CSI) ➢CME Submittal Response (CSR)
Local System to CERS	• Regulated facilities are encouraged by their CUPA (and PAs) to use the CUPA's local web portal for their facility reporting because the portal provides added value beyond the facility reporting features provided by Cal/EPA in CERS. However, organizations with facilities in multiple UPAs may opt to use Cal/EPA's CERS portal regardless of the CUPA's local web portal. • The regulator's local system **exports** any CERS-originated facility submittal XML data into the regulator's local system via EDT. • Regulator staff reviews and acts upon submittals in their local system(s)**. • The local system submits via EDT Regulator Facility Submittal XML transactions for local web portal-generated Facility Submittals (and/or CERS-generated Facility Submittals with non-substantive corrections). Local System also submits Regulator Facility Submittal Action Notification XML transactions for CERS-generated Facility Submittals and/or any Facility Submittals the regulator is not immediately acting upon (status *Submitted* or *Under Review*). • Regulator staff enters their inspections, violations, and enforcements data (CME) into their local systems, and then the local system submits new and updated CME data using CME Submittal XML transactions via EDT.	➢Regulator Facility Submittal Export (RFSE) ➢Regulator Facility Submittal (RFSI) ➢Regulator Facility Submittal Action Notification (RFSAN) ➢Regulator Facility Submittal Response (RFSR) ➢CME Submittal (CSI) ➢CME Submittal Response (CSR)

*A regulator could also opt to ONLY use the CERS web portal for managing their CME Data. CME Data can be entered manually in the CERS user interface, or uploaded in "flat file" format using a rigorously-defined, Microsoft Excel spreadsheet template.

**A regulator's local system(s) may involve only a local web portal, or a local web portal communicating with some other local system (only one of these systems can communicate with CERS).

Section 2: Implementing CERS EDT as a Regulator

Subscribe to Cal/EPA's CERS2 EDT Listserv
The CERS Electronic Data Transfer Implementation listserv is a free service; you will receive periodic e-mails with the newest CERS EDT Implementation listings. Subscribe at http://www.calepa.ca.gov/Listservs/ListSubscribe.asp?LID=110.

Review documentation on the CERS EDT Home Page
http://cers.calepa.ca.gov/EDT/

Study CERS Data Registry/Data Dictionaries
Become familiar with the Unified Program Data Dictionary by using the CERS Data Registry
- o   Search/query or download the Unified Program Data Dictionary Version 3.10
- o   Search/query or download the CERS System Fields data dictionary.
- o   Search/query or download the CERS Supplemental Fields data dictionary
- o   If you have data which may map to the past/original Title 27 Unified Program Data Dictionary definitions, review "Summary of Data Exchange-Related Changes to the Unified Program Data Dictionary"

Map Local System Fields to CERS Data Dictionary Fields
This may require extensive assistance from program and other knowledgeable staff about the local data systems. The staff performing this mapping must identify where local fields diverge from CERS fields so programmers can develop the transformations and/or interpolations necessary to populate CERS submittal data.

Develop Code to Create XML Submittal Files
Develop code to transform mapped local fields into XML packages following the appropriate CERS XML submission schema. The majority of CERS business rules are expressed in the schema validations, so developers can and should extensively test and analyze their draft XML submittals against the published schemas before they attempt test submittals against CERS EDT Services.

Learn about CERS Data Seeding
Most regulators implementing EDT will probably want to perform an initial load of their basic facility data into CERS2 to establish a CERS ID for their facilities and exchange keys. Learn more about Data Seeding at http://cers.calepa.ca.gov/DataSeeding/.

Sign Cal/EPA's Data Exchange Agreement
Later in 2012 Cal/EPA will release its regulator data exchange agreement. The agreement will indicate the technical and program contacts for the regulator, a detailed listing of CERS EDT roles/responsibilities/procedures, and must be signed by the CUPA's program manager. An abbreviated agreement will be available for CUPAs/PAs who wish to **only** download/export data (no updates) via CERS EDT endpoints.

Establish a Dedicated CERS Account for EDT Transactions
To use the CERS EDT Services, each UPA will need to establish a CERS account dedicated exclusively for EDT

transactions. TSU staff will ensure this account has rights to access the REST endpoints on behalf of the UPA (and its PAs where relevant), but will have very limited rights in the CERS user interface.

Performing Test Submittals

Once an exchange agreement has been received and the dedicated CERS account established, TSU staff will establish rights for the UPA to initially access a test version of the CERS EDT services. Once the regulator (and/or their vendor/contractor) has demonstrated an understanding of EDT processes and has successfully used all relevant test services, TSU staff will grant additional rights to the dedicated CERS account to perform production submittals.

Performing Production Submittals

Regulators will need to ensure they submit status information to CERS on all Facility Information Submittal Elements within 15 calendar days. Regulators with local web portals must send their facility submittal data within 15 calendar days of submission by the facility owner/operator (initial status can be *Submitted* or *Reviewed* and then later updated using Facility Submittal Action Notification XML transactions. Cal/EPA will establish policy guidance for CME submittal timeframes—it will encourage prompt submittal of CME data with an outer deadline around 90-120 days after the action date.

Section 3: Key Concepts in CERS and CERS EDT

CERS2 represents the second generation of the Cal/EPA's online facility reporting tool, and includes a number of significant changes from past practices and assumptions in CERS1 and processing of paper UPCF forms. Listed below are a number of key concepts which CERS EDT implementers should understand.

Facility Submittals

Facility Submittals in CERS2 are made up a series of one or more *Submittal Elements* (see below), not all of which need to be submitted simultaneously by a reporting facility (or reviewed/acted upon simultaneously by a regulator). This is different than the monolithic, all-programs submittals supported in UNIDOCS and CERS1, and will often be somewhat different than the practices used by regulators in the past with paper UPCFs.

Submittal Elements

A *Submittal Element* represents the data elements and supplemental documentation an organization would report about their facility on one or more related/dependent paper forms (UPCFs). Several of the six program elements making up the CUPA Program are divided into more than one *Submittal Element* to allow regulated entities and regulators to submit/review/approve information on differing statutory/regulatory deadlines for certain reporting data/UPCFs. CERS business logic will demand that one and only one regulator can take action on a specific *Submittal Element* for a specific facility. **Appendix F** lists the CERS2 Submittal Elements and their relationship to UPCFs.

Supplemental Documentation

Each Submittal Element has one or more supplemental documents associated with it. This is documentation the facility owner/operator needs to provide in certain cases as specified in the UPCFs, Unified Program regulations, and/or is a locally required document upload. Based upon direction from the Unified Program Data Steering

Committee, reports can select **one** of the options below to fulfill a specific supplemental documentation requirement:

- Upload a Document (1 or more)
- Provide a Public Internet URL (must be non-secured, no more than 1 hop)
- Indicate document is stored at the facility
- Indicate document previously provided to the local regulator
- Indicate document already provided in some other submittal element
- Indicate facility is exempt from the supplement documentation requirement

Presumably most facility submittals will fulfill supplemental documentation requirements through a document upload(s). The "provided to regulator" and "stored on site" options should be used in very narrow/defined cases since they can result in information not being available to emergency responder or the public in a timely manner. Every submittal element includes an optional "Locally Required Document" in case the facility's local regulator has special reporting requirements.

Organizations

The *"Organization"* entity is a new CERS2 concept allowing businesses and/or regulators to manage a group of one or more users (CERS accounts) to administer a collection of one or more facilities. **Every** facility (reporting entity) will be associated with **one** Organization in CERS2. Since facility owners/operators may include businesses, governments, non-profits, etc., the generic term "organization" was adopted by the CERS Change Management Committee. CERS technical documentation will normally use the term "Organization" to refer to businesses and other organizations with reporting facilities, but the web portal for businesses/organizations and more public-oriented documents may use the term "business" in place of "Organization."

For EDT implementers, the impact of organizations will be whenever an EDT facility submittal requires creation of a new CERS facility/ID, the regulator is required to search CERS' Organization directory and provide the facility's Organization information if it exists in CERS. Otherwise, CERS will establish a new Organization for the new facility based on the facility's name (with the address possibly appended to ensure uniqueness compared to other Organization names).

CME vs. Facility Submittals

"CME" is an US EPA RCRA acronym for "Compliance, Monitoring, and Enforcement" and is used in CERS to generally refer to inspection, violation, and enforcement data. Regulators **can** update their CME submittals. Organizations **cannot** update their submitted Facility Submittals, and regulators can **only** update/finalize a submittal's status and comments. Organizations can perform the equivalent of an "update" by copying the previous submittal, making necessary corrections, and submitting the data as a new Facility Submittal—this is how the CERS UI works, and presumably how any local web portal would work as well. Regulators should always encourage submittal data to be entered by the Organization's authorized users through CERS or a local web portal to ensure organizations cannot claim their submittals have been tampered with or otherwise not reflect their actions/intentions. However, a regulator can on behalf of an Organization make non-substantive changes via a new facility submittal **IF** they follow a documented process and record in their local data systems or in some other standard fashion the basis and/or authority of the non-substantive changes.

XML vs. Flat-File Data Submittal in CERS2: CERS2 will have very specific and limited support for receiving and exporting/downloading "flat-file" data in the CERS user interface as shown below. CERS2 will not support any direct machine-to-machine transfer of flat-file data.

- CME submittals (CUPAs only) and downloads (CUPAs and PAs) via a specifically formatted, multi-worksheet Microsoft Excel file.
- Uploads and downloads of Chemical Inventory data in a specifically formatted, single worksheet Microsoft Excel (or CSV) file for a single facility, as well as for multiple facilities for a single organization.
- Regulator downloads of one or more Facility Information Submittal Elements (Business Activities and Owner/Operator UPCFs) using a specifically formatted, single worksheet Microsoft Excel file. [This same format will be used for initial seeding of draft Facility Information submittal elements by non-EDT regulators].

Regulator EDT Submittals Performed by CUPAs

All EDT submittals must be performed by the CUPA on behalf of any PAs they may have. PAs (and CUPAs) can gain authorization to export/download XML submittal data as needed/desired.

Submittal Statuses

Unlike in CERS1 and some existing Regulator business processes, in CERS2 each submittal element has its own Submittal Status (and Regulator review comments). This approach supports the following objectives:
1) Businesses submitting only the specific forms/program elements they are required to submit at any given time
2) Regulators can focus on reviewing/approving only submittals for the program elements they regulate
3) Generally assist with reporting and statistics,

Listed below are the CERS2 Submittal Statuses as adopted by the CERS Regulator User Group and Cal/EPA.

Draft	A business/organization has begun preparing/entering program element data but has not yet submitted the data to their regulator for review. Regulators (and CERS Help Center staff) will have read-only rights to Draft submittals to assist/advise business users when necessary. However, Draft submittals will always be clearly marked as Draft and will never be included in any statistics or metric reports.
Submitted	The submitted program element has been recorded into CERS and meets minimal data validation requirements. Depending upon the program element, the regulator may be required to accept the submitted program element.
Under Review	Regulator is reviewing the submitted program element. This is an optional status Regulator can use to express to an organization (and other regulators) they are or intend to review a submittal.
Accepted	Regulator has reviewed the submitted program element and finds the data/documents meet state and local reporting requirements. The Regulator has not necessarily field-verified the submitted data.
Not Accepted	Regulator has reviewed the submitted program element and finds the data/documents do not meet state and local reporting requirements. Regulator has required the business to make a new submission for the program element.
Not Applicable	Regulator has reviewed the submitted program element and determined the business/organization is not required and should not submit the data to the regulator. Submittals marked as Not Applicable will not be included in any CERS2 statistical reports, and businesses/organizations will not receive future reminders/alerts to submit the program

<mark>element.</mark>

Organizations Can't Edit Submitted Facility Submittals

Once an organization has submitted one or more Submittal Elements into CERS, they become a single Facility Submittal which can no longer EVER be edited by the organization. If an organization wishes to correct/update a Submittal Element(s), either because the regulator has "Not Accepted" the Submittal Element(s) or the organization just needs to send new/updated information, the organization must submit a new Facility Submittal via CERS or a local web portal. The CERS user interface will make it easy for organizations to copy and then modify their last submittals—local web portals should provide similar functionality.

Limited Scenarios When Regulators can Update/Correct Facility Submittals

Once submitted by an organization, typically the only data ever edited/updated for a Submittal Element is the **Submittal Status** provided by the regulator. The Submittal Status (and any comments the regulator wishes to provide to the organization about their review of the Submittal Element) can either be:

- Initially set and later edited by authorized regulator staff in the CERS user interface;
- Initially set in CERS EDT via the Facility Submittal EDT service (i.e., a Facility Submittal originating in a local web portal rather than CERS);
- Updated in CERS after the initial Submittal Element XML submission using the Facility Submittal Action Notification EDT service. This scenario would be a Facility Submittal that originated in a local web portal and was initially imported to CERS with a Submittal Status of <mark>*Submitted*</mark> or *Under Review*, and then needs to be later finalized by the regulator.

<mark>~~Once a regulator "finalizes" the status of a submittal element (*Accepted, Not Accepted, Not Applicable*) the status cannot be updated further.~~</mark>

Sometimes a regulator may wish to "update" or correct organization-submitted facility data on behalf of an Organization. To avoid the possibility of an organization legally disowning "tampered" facility submittals, regulators should generally avoid doing this and instead ask the Organization to resubmit an updated facility submittal via CERS or the local web portal. However, Regulators can make a minor, non-substantive correction(s) to organization-provided facility data by:

1. <mark>Send a Facility Submittal Action Notification message to CERS setting the status of the original submittal element(s) to "Not Accepted" and ideally including comments on why/what non-substantive correction(s) needs to be made; and</mark>
2. <mark>Submitting a new Facility Submittal consisting of any corrected Submittal Element(s) as well as the complete set of data/document uploads.</mark>

Regulators are encouraged to document the basis of the submittal in the Submittal Status comments. Additionally, the regulator's local data systems/processes **MUST** record the basis of the correction(s) that was incorporated into the new submittal and who/how the correction(s) was authorized by the Organization.

Exchange Agreement: All regulators and organizations/businesses using CERS EDT will be required to sign a data exchange agreement with Cal/EPA. The agreement will establish roles and responsibilities, key contacts, processes for resolving problems, etc. To get a sense of what the exchange agreement might look like, please

see the SWIS DIP Data Exchange Guidelines document. TSU anticipates the CERS EDT agreement will be more rigorous than SWIS DIP as the Unified Program and its data exchanges are more complex and have more legal implications. The exchange agreement (or possibly some other interim agreement) will need to be signed by the regulator's program manager before Cal/EPA staff will allow the regulator's IT staff (or contractor/vendor) to begin testing and eventually using production CERS EDT web services.

Test Environment: A separate test environment for use only by EDT implementers will be available for testing/systems integration with CERS EDT services. Regulators and organizations will be required to demonstrate their ability to successfully use CERS EDT web services in the test environment before they can submit to the production EDT services.

EDT Monitoring Tools: Each regulator participating in EDT will have to create at least one CERS account dedicated to CERS EDT transactions. This account (and any other CERS regulator users authorized for EDT services) will be able to access a set of secured web pages within CERS providing dashboard and management reports on EDT transaction history, along with any other EDT-specific features that may be needed/helpful to EDT implementers.

Submittal Validation Logic: The CERS user interface and EDT services use the same submittal and validation logic for consistent processing and error reporting.

Immediate/Deferred Processing: TSU anticipates CERS EDT Services providing immediate ("real time") transaction processing for both **single** facility submittals and **single** inspections/enforcements submittals. However, CERS EDT Services will never **guarantee** immediate processing of any submittal due to the many complex validation processes required for each potential submittal element. For deferred transactions, CERS returns submittal response indicating the transactions position in CERS' processing queue, and a TransactionKey the regulator can use for later querying of the transaction's status/results. When a transaction is processed, the CERS submittal response returns the submittal's status, error information, and return values. Generally, **multiple** EDT facility submittals and lengthy CME submittals will **always** be queued for deferred processing.

CERS/Local Identifiers Exchange: Most submission methods will require regulators to provide unique local identifiers for their data entities (e.g. UST Tank, Inspection, etc.). The relevant web service API will return CERS unique identifiers and any other return values for the submitted data entities.

Section 4: Data Validation in CERS2

CERS2 implements several types of data/submittal validations which will greatly improve upon the data validation offered in CERS1/UNIDOCS (and obviously is far better than paper forms). These validations will assist reporters in improving the quality and completeness of their submittals to regulators, as well as help regulators focus their submittal reviews on key business issues.

Listed below is brief summary of the four types of data validation which are planned for CERS. For each validation type, a summary of validation is provided along with a discussion of how it will be implemented in the CERS2 user interface (UI) and should be implemented in CERS2 EDT.

Type 1: Form Field Validation

Applied To	A single field on a single form
Based On	Field descriptions in the Unified Program (Title 27) Data Dictionary
Description	Data provided by a user in any particular field on a specific form will be validated that it matches the data type, format, and/or code values specified in the Unified Program Data Dictionary.
UI Consequence	The CERS2 UI will display a warning(s) to the user for a field(s) containing an invalid value(s). The user will not be able to save (or submit) the form until the field value(s) is corrected/valid. Generally the user interface will ensure that for a given field a user can only enter the appropriate data type (e.g., numeric, data, alphanumeric), the valid code values (i.e., the field can only contain the values 01, 02, 03, or 99), and/or exceed the maximum lengths of an alphanumeric field.
EDT Consequence	The entirety of a Facility Submittal will be rejected if **any** field on **any** submittal element does conform to the field's definition in Unified Program Data Dictionary as defined in the CERS2 XML schemas (XSDs). Regulators implementing their own web portals should ensure their UI implements all the form field validations described in the Unified Program Data Dictionary and relevant XSDs.

Type 2: Minimally-Required Form Field Validation

Applies To	Multiple fields on a single form
Based On	Approved lists of Unified Program Data Dictionary fields as adopted by the CERS Regulator User Group and shown in the CERS Data Registry.
Description	The CERS Regulator User Group established a set of CERS2 "minimally-required" fields for the equivalent of each UPCF. This set of fields (typically 3-12 fields per form) represents the absolute minimum set of fields any UPA statewide would require an organization to report on a specific UPCF. An organization will NOT be able to submit a submittal element until **at least** all the minimally-required fields are provided. A regulator may reject a submittal element if other important but not minimally-required fields are incomplete.
UI Consequence	In the CERS2 UI a warning(s) will be displayed to the user for any minimally-required field(s) without data. The user will in most cases be able to save a partially completed form missing minimally-required field data, and can then resume completion of the form at a later date. However, a form with missing minimally-required field data will stop the user from submitting the program element to their regulator until the minimum-required field(s) is populated.
EDT Consequence	The entirety of a Facility Submittal will be rejected if data is not provided in **any** minimally-required fields for any submittal element. Regulators implementing their own web portals should ensure their UIs make all minimally-required fields mandatory.

Type 3: Dependent Form Field Validation

Applies To	Two or more dependent fields on a single form (*intra-form dependencies*)
Based On	Instructions on reverse of each UPCF; linkages identified in the Unified Program Data

	Dictionary field descriptions; suggestions from CERS User Groups
Description	Some fields on a UPCF are linked to other fields on the same form such that data entered in one field will require data to be entered in another field. A common example in the Unified Program Data Dictionary is a field describing a list of options that also includes an "Other" option which is then further described in a separate description field. In many cases these intra-form field dependencies are represented in the CERS EDT XML Schema via appropriate structuring of XML (parent-child nodes, Choice sequences, etc.). However, in some cases, the Unified Program Data Dictionary field definitions mandated in regulation are not amenable to XML-based validation rules, and business rules will have to be described in a document and implemented in all relevant systems.
UI Consequence	The CERS2 user interface will disable/enable form elements and/or emit a warning(s) when dependent fields (as defined in the CERS XML Schema) require data entry. Field dependencies that can't be represented in XML Schema but implied/stated in the Data Dictionary/UPCFs may be implemented initially in the CERS2 UI, but not necessarily required for external systems.
EDT Consequence	The CERS XML Schema are structured to capture as many of these intra-form field dependencies as possible, so well-formed XML submittals will address these. Cal/EPA will release documentation in Fall 2011 identifying any other required intra-form validations not represented in XML Schema. For example, to support international addresses for various contacts, there will be a series of business rules relating to the State, ZIP Code, and Country address fields.

Type 4: Submittal Element Business Rules

Applies To	One or more forms/documents for a submittal element (*inter-form dependencies*)
Based On	Statutory/regulatory mandates; instructions on reverse of UPCFs; policy letters/memos from state regulators. "Required" rules only implemented on approval of appropriate state agency.
Description	In many cases the completion of one form (or selection of a specific field value on that form) may trigger a need for the user to provide an additional form(s)/document(s) for a submittal element. Prior to submitting a submittal element(s) to their regulator, an organization should be provided with one or more advisories based on a submittal element's business rules, suggesting the need to complete or upload new forms/documents (or review/confirm previously submitted forms/documents). When regulators are reviewing submittal elements, they should be able to view any advisory(s) the organization did not resolve in their submittal, along with an explanation the business can optionally provide describing why they believe the advisory(s) did not apply to them. Cal/EPA anticipates CERS2 will provide 3 categories of submittal element business rules: • **Required**: A form/document is *required*, and if missing, will prevent a user from submitting the program element. • **Warning**: A form/document is *strongly recommended*, but a user can still submit the program element without this form/document. • **Advisory**: A form/document *might be applicable*, but a user can still submit the program element without this form/document.

	Cal/EPA anticipates applying an absolute minimum of "Required" program element business rules to avoid problems and confusion during the initiation of CERS2. Any "Required" rules will need to be approved in writing by the appropriate state agency that oversees that program element.
UI Consequence	When organization save the equivalent of a UPCF form in the CERS2 UI, they will be presented with an advisory(s) for any additional form(s)/document(s) they should consider completing (or review/confirmation of a previously submitted form(s)/document(s)). A more comprehensive list of all submittal element advisories will be presented to users before they attempt to submit a submittal element(s) to their regulator, along with a text area where they can opt to comment on why they believe the warning(s) or advisory(s) does not apply to them. If a program element has one or more "required" program element business rules, the user will be unable to submit the program element until they provide the necessary form(s)/document(s) described in the rule. All rules will be displayed with color-coded icons to help show the relative severity of the rule (Required=red, Warning=orange, Advisory=yellow).
EDT Consequence	The entirety of a Facility Submittal will be rejected if one or more "Required" submittal element business rules are not met on any submittal element. EDT services will return a human-readable and XML-formatted listing of business rule advisories for all submitted elements. Regulators implementing their own web portals should ensure they implement any business rules adopted by state agencies. Information on such adoptions will be distributed through the EDT Implementers listserv.

Type 5: Cross-Element Business Rules

Applies To	One or more forms/documents in at least two separate submittal elements (*cross-element dependencies*)
Based On	Statutory/regulatory mandates; instructions on reverse of UPCFs; policy letters/memos from state regulators.
Description	In a few cases, Unified Program reporting mandates translate into situations where providing data in a field or an entire form/document in one submittal element could require the submission of another submittal element. To reduce complexity and maintain submission/review flexibility by submittal element, these cross-element dependencies will not be formally implemented/required in CERS2. In some cases, CERS2 may emit warning or advisory guidance messages during submittal element validation indicating the user should consider (have considered) providing another submittal element.
	The only cross-element dependency being implemented in CERS2 concerns the *Facility Information Submittal Element*. Cal/EPA has determined this submittal element should ALWAYS accompany any other submitted submittal element. This requirement matches explicit mandates regarding Inventory, UST, and HazWaste/TP submittal elements, and mirrors the typically paper-based processes of the past.
UI Consequence	In the CERS2 UI, Organizations will not be able to submit any submittal element without first updating/confirming their Facility Information Submittal Element.
EDT Consequence	The requirement to always include an updated Facility Information Submittal Element is captured in the CERS EDT Schema.

Section 5: Facility Submittals EDT

Definitions and Business Rules

- A **Facility Submittal** consists of the data for a single facility an *Organization* intentionally submitted to CERS (or a regulator portal) to meet their legal reporting requirements for the facility. An *Organization* reporting on their multiple facilities would result in multiple *Facility Submittals*.

- A *Facility Submittal* is made up of one or more *Submittal Elements*.

- A **Submittal Element** represents the data elements an organization would report about their facility on one or more related/dependent paper forms. A *Submittal Element* generally is equivalent to one UPCF or several interdependent UPCFs along with any accompanying documentation required by the UPCFs (*Document Uploads*). Several of the six program elements making up the CUPA Program are divided into more than one *Submittal Element* to allow regulated entities and regulators to submit/review/approve information on differing statutory/regulatory deadlines for certain reporting data/UPCFs.

- A *Submittal Element* can be regulated by one and only one regulator (CUPA/PA) for a specific facility. Cal/EPA and UPAs jointly manage a table in CERS associating each *Submittal Element* for a specific facility to a single regulator (and a similar table by ZIP Codes for new/future facilties). CERS business logic will demand that one and only one regulator can take action on a specific *Submittal Element* for a specific facility.

- A **Transaction** (in CERS EDT) represents a single EDT exchange from an authorized user of CERS EDT services consisting of at least one *Facility Submittal* (or one CME Submittal). Regulator *Transactions* are identified by two UUID/GUID fields: a *RegulatorTransactionKey* (20.0003) provided by the regulator, and a separate *TransactionKey* (20.0002) returned by CERS upon successful receipt of a *Transaction*. If CERS discovers an error anywhere in an EDT transaction, the entire EDT transaction will be rejected.

- When a regulator wishes to submit a *Facility Submittal* for a facility which does not already exist in CERS (i.e., a new facility with no CERS ID), a NewIDJustification value (#20.0018) must be provided in a RequestNewCERSID element in the RegulatorFacilitySubmittal Schema's Identifier element. The regulator can also choose to initialize the facility's "ReportingRequirement" (20.0088) and/or set the "Next Due Date" (20.0087).

- *A Facility Submittal* and its various **Submittal Elements** can NEVER be "updated" in CERS once submitted. A **Facility Submittal** must reflect the data provided by the organization for their facility in its entirety to meet their legal reporting requirements (even if an individual **Submittal Element**(s) is rejected by the regulator and/or CERS). EDT implementers can submit a new submittal element with non-substantive "changes," essentially emulating the user completing a new submittal with updated data. However, Regulators are discouraged from making these types of edits. If they do, they must adhere to a standard, defensible business process which documents changes in submittal data not directly originating from the facility owner/operator.

- If an organization needs to "update" or "correct" a submitted *Submittal Element(s)*, an entirely new *Submittal Element(s)* must be submitted.

- **Submittal Action Notifications** are a separate data exchange allowing regulators to submit (or change) the status of a previously submitted *Submittal Element*. Regulators using CERS as their data entry portal and downloading/exporting Facility Submittal data from CERS would normally only submit Submittal

Action Notifications to CERS (unless they are sending a Facility Submittal for a new CERS facility/ID or sending a new submittal with non-substantive corrections).

Facility Submittal Action Notifications

Once an organization has submitted one or more Submittal Element into CERS, it becomes a single Facility Submittal and can no longer EVER be edited by the organization. The only editable data for a submitted Submittal Element is the Submittal Status information set by the Regulator (SubmittalAction #20.0005, SubmittalActionDateTime #20.0006, SubmittalActionAgentName #20.0007, SubmittalActionAgentEmail #20.0008, SubmittalActionComments #20.0009). This data can be submitted to CERS using Facility Submittal Action Notifications. Action Notifications support the following scenarios:

- Regulators exporting facility submittals from CERS can **complete** their review by sending an Action Notification for the submittal element(s) with status *Accepted*, *Not Accepted*, or *Not Applicable*.
- Regulators exporting facility submittals from CERS can **defer** acceptance/non-acceptance of a facility submittal element(s) by sending an initial Action Notification with status *Under Review*, and then submit a future Action Notification of *Accepted*, *Not Accepted*, or *Not Applicable* when the regulator has completed their review of the submittal element(s).
- Regulators generating **new** facility submittals from their local systems (typically via a local web portal) need to submit this data to CERS within 15 calendar days of submission by the facility owner/operator (to meet emergency responder mandates). To **defer** their initial/final review of the submittal element(s), the regulator would initially submit the complete facility submittal with status *Submitted* or *Under Review*, and then later would send an Action Notification on their final action on the submittal element(s).
- When a regulator discovers a facility's submittal element(s) previously submitted by the Regulator as *Accepted* or *Not Applicable* is incorrect based upon an inspection or other new information, the Regulator can send an Action Notification and set the submittal element(s) to *Not Accepted* or other applicable status.

The following business rules apply to Facility Submittal Action Notifications:

- Action Notifications never have a Submittal Element status of *Submitted* because the Facility Submittal record either originated from CERS or a prior Regulator Facility Submittal transaction.
- There is no limit on how many Action Notifications can be sent for a particular submittal element of a facility. However, changes in submittal element status will trigger alerts/notifications to facility owner/operators, so changes should be minimized and explained in the SubmittalActionComments (#20.0009).
- ~~Once a regulator sets a Submittal Element's status to *Accepted*, *Not Accepted*, or *Not Applicable*, the Submittal Element's status can no longer be modified via Action Notifications. However, updates to Submittal Action comments can continue to be updated via Action Notifications if needed.~~ [This was removed at the request of the CERS Regulator User Group]

Restrictions/Requirements for XML-only Facility Submittal Transactions

In general Facility Submittal transactions using the XML mime-type should be used to submit a single facility submittal with a few Submittal Elements and NO document uploads. Facility Submittal(s) submitted to CERS endpoints directly as XML must meet the following requirements:

- The Content-Type header field must be `text/xml`.
- Includes an Authorization HTTP header with a valid CERS credential (see Appendix C).
- The XML-only facility submittal(s) transactions cannot exceed the maximum acceptable XML only submission size [maximum limit still to be determined by Cal/EPA; anticipated to be 1MB-5MB].
- The XML cannot include any submittal elements referencing document uploads.

Restrictions/Requirements for ZIP File Facility Submittal Transactions

In general Facility Submittal transactions using the ZIP mime-type should be used for a single Facility Submittal that includes submittal elements with Document Uploads, or for submitting multiple Facility Submittals with or without Document Uploads. Facility Submittal(s) submitted to CERS endpoints as ZIP files must meet the following requirements:

A Facility Submittal transaction using the ZIP mime-type must meet the following conditions or it will be rejected:

- The Content-Type header field must be `application/zip`.
- Includes an Authorization HTTP header with a valid CERS credential (see Appendix C).
- Contains a single file named **data.xml** containing the facility submittal(s) data (using RegulatorFacilitySubmittalImport.xsd).
- Does not contain subdirectories, ensuring no two Document Uploads have the same file name.
- A single Document Upload file cannot be referenced in multiple Facility Submittals (i.e., same file referenced for multiple facilities). However, a Document Upload can be referenced by multiple Submittal Elements within a single Facility Submittal.
- Only contains documents explicitly referenced by the data.xml file (i.e., if additional unreferenced files are present besides data.xml, the transaction will be rejected).
- All documents uploads are approved CERS document upload types.
  - **Graphics**: .gif, jpeg, jpg, png, svg
  - **Generic Text**: txt, rtf, htm, html, csv, xml
  - **Documents**: pdf, doc, docx, xls, xlsx, ppt, odt, ods, pptx, zip
- The ZIP file does not exceed the maximum acceptable ZIP file size [maximum size limit still to be determined by Cal/EPA; anticipated to be 150MB-300MB].

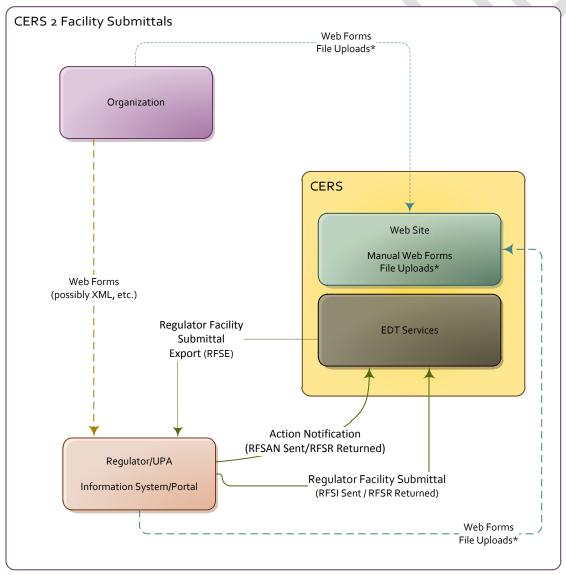Other considerations for ZIP file Facility Submittal transactions:

- Document uploads included in ZIP files will be evaluated as case-insensitive file names.
- Document uploads should not exceed the maximum acceptable document upload size [currently set at 25MB, but may be modified by Cal/EPA if necessary].

Restrictions on Facility Submittal Export Transactions

- Authorized regulators can request either XML or ZIP file exports transactions using the appropriate mime-type header to the endpoint.
- If a regulator makes an XML request for a facility submittal(s) which contain a document upload(s), the request will be rejected and the request can be resubmitted using the ZIP mime-type header.
- If a regulator makes an XML request for a facility submittal(s) which results in a very large XML file, the request will be rejected and the request can be resubmitted using the ZIP mime-type header [maximum XML download size still to be determined by Cal/EPA].

Facility Submittal Schemas and Conceptual Data Flow

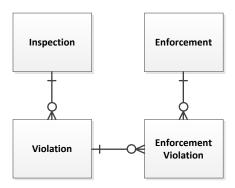| XSD Name	Description	ID
RegulatorFacilitySubmittalExport.xsd	Allows receiving (export) of Facility Submittal(s) data in CERS.	RFSE
RegulatorFacilitySubmittal.xsd	Allows Regulator submission (import) of one or more Facility Submittal(s) originating from the regulator's local web portal.	RFSI
RegulatorFacilitySubmittalActionNotification.xsd	Allows Regulators to change/update the Submittal Status of one or more Submittal Elements in one or more previously received Facility Submittals in CERS.	RFSAN
RegulatorFacilitySubmittalResponse.xsd	Provides results of Facility Submittal and Facility Submittal Action Notification transactions.	RFSR

*Flat file uploads (MS Excel, CSV) supported for Inventory and CME data only.

Section 6: CME EDT Submittals (Inspections/Violations/Enforcements)

This section discusses general business rules, data flows, system fields, and conceptual XML schemas structures needed for electronic data transfer of Inspection, Violation, and Enforcement Data. Most CERS documentation will use the acronym "CME" to generically refer to this data—CME is used in US EPA's RCRA-related data systems and stands for "Compliance, Monitoring, and Enforcement."

CME EDT is a **one-way** flow from regulators to CERS (Cal/EPA). One of the key differences between CME and Facility Submittals EDT is update and deletion requests can be transmitted for CME entity records previously submitted by the regulator (e.g., to provide a Return-To-Compliance Date). There are four CME data entities involved in CERS CME.

Under the original Title 27 Data Dictionary (T27-DD) specification, regulators only needed to supply Inspection and Enforcement records (no Violation or EnforcementViolation details), with various violation summary count fields and other Enforcement fields allowing summary reporting. However, those original CME Data Dictionary definitions did not support statewide electronic reporting mandates or some federal reporting mandates. Therefore, a significant number of corrections/modifications were made to these portions of the Data Dictionary.

Although regulators are **not currently** required to supply Violation or EnforcementViolation detail information in most cases, Cal/EPA will be actively seeking this requirement in the future, and regulators **must** currently provide violation details to Cal/EPA for Large Quantity Generator violations (to meet the state's reporting requirements to US EPA). The current CME schemas (and the CERS UI) support either type of reporting, but EDT implementers are encouraged to implement reporting of violation details and enforcement-violation details.

Like all EDT-based submitted data, only CUPAs can submit CME data via EDT, so CUPAs with PAs would generally have responsibility for collecting/compiling CME data from PAs. PAs can also manually enter CME data in the CERS UI for the submittal elements/facilities they are specifically responsible for.

Although not part of EDT, the CERS user interface will support "flat file" uploading of CME data using a rigorously defined Microsoft Excel spreadsheet workbook template that includes 4 worksheets (one for each CME data entity). Essentially, the entire workbook will be transformed into a CMESubmittal.xml file and sent through the EDT submittal logic.

Some local data systems may not be currently structured to track/retain deleted CME entity records for later submission to CERS. Potential solutions for regulators with this issue could include:

- Modifying their system to perform "logical" deletes rather than physical deletes and then report on logically-deleted records.
- Put a trigger on deleted records to copy the record to a separate tracking table.
- Develop a business process that when local CME entity records are deleted, regulator staff sign-in to CERS and perform the equivalent CME entity deletes in the CERS CME UI.

CME Business Rules

- If **any** CME entity record in a submittal is rejected, **ALL** CME entity records in the submittal will not be processed by CERS. CERS will return an EDT transaction error summary which the regulator can use to correct the submittal for later resubmission.

- CME entity records violating any of the rules below including the term "must" will be rejected.

- CME records are **submitted** one-way, from a **CUPA** to CERS. However, both CUPAs **and PAs** can export/download CME data, either in XML format using the CME Submittal Export endpoints, or in "flat file" format via the CERS UI as a rigorously formatted Microsoft Excel spreadsheet format.

- CUPAs with PAs are responsible for collecting and submitting EDT-based CME data on behalf of their PAs.A CME entity record's *RegulatorCode* must match a regulator associated with the facility in CERS.

- CME entity records must be submitted for existing CERS IDs.

- RegulatorKeys (InspectionRegulatorKey, ViolationRegulatorKey, EnforcementRegulatorKey, and EnforcementViolationRegulatorKey) for CME records must always be unique in the regulator's local system for a specific Inspection, Violation, Enforcement, or EnforcementViolation record. Cal/EPA encourages regulators to use UUIDs/GUIDs for CME RegulatorKeys to guarantee uniqueness. CME entity records created in the CERS UI will not possess RegulatorKeys, and thus cannot be updated via EDT.

- Updates can be submitted to CERS for existing CME records. This can be done at any time after the initial submittal by providing the appropriate RegulatorKey for the CME record, setting the record's *CMEDataStatus* as necessary (*Approved* or *Deleted*), and the *RegulatorActionDateTime* field must be set to a date/time later than the initial/previous submittal for the CME record.

- Submittals updating existing CME records must include ALL of the fields making up the CME record. If CERS accepts the update, the record will be updated/replaced with the new record. The absence of data will result in removal of the data in that field (if any). The old version is archived.

- An update submittal for a CME entity record must always have a different, and later, *RegulatorActionDateTime*, than the previous submittal, or it will be rejected. CME entity records should not be sent out of sequence.

- If a CME entity record is updated through the CERS UI, the *RegulatorActionDateTime* for that entity will be updated to reflect the date of the change. Subsequent updates to this record via EDT must have a *RegulatorActionDateTime* later than this update, or the submittal will be rejected.

- If multiple records for a single CME entity are submitted in the **same** EDT transaction, only the record with the **latest** *RegulatorActionDateTime* will be processed, with the other records ignored.

- If multiple records for a single CME entity are submitted in the **same** EDT transaction **with the same** *RegulatorActionDateTime*, only the **last** record in the order submitted will be processed, with the other records ignored.

- If an Inspection entity record is accompanied by Violation entity records, the Inspection's Violation Summary Count values (ClassIViolationCount (#910), ClassIIViolationCount (#911), and MinorViolationCount (#912)) will automatically be updated with calculated counts based on the Inspection's linked Violations.

CME Entity Record Date Validation Rules

- An Inspection entity record's OccurredOn date value (#906) must be greater than October 1st, 1980 and less than or equal to the date of the submittal.[i]

- A Violation entity record's OccurredOn date value (#932) must be greater than October 1st, 1980 and less than or equal to the date of the submittal.[ii]

- A Violation entity record must include either a valid ScheduledRTCOn date value (#933) or ActualRTCOn date value (#934).

- If a Violation entity record includes a ScheduledRTCOn date value (#933), the date must be greater than or equal to the OccurredOn date value (#932).

- If a Violation entity record includes an ActualRTCOn date value (#934), the date must be greater than or equal to the entity's OccurredOn date value (#932) and less than or equal to the date of the submittal.[iii]

- If a Violation entity record includes an ActualRTCOn date value (#934), it must be accompanied with a valid ActualRTCQualifier value (#935).[iv]

- If a Violation entity record includes an ActualRTCQualifier value (#935), it must be accompanied with a valid ActualRTCOn date value (#934).[v]

- An Enforcement entity record's OccurredOn date value (#915) must be greater than October 1st, 1980 and less than or equal to the date of the submittal.

- If an Enforcement entity record is linked to one or more Violation entity records through the use of EnforcementViolation entity records, the Enforcement entity record's OccurredOn date value (#915) must be greater than or equal to the most recent Violation entity record's OccurredOn date value (#932).[vi]

CME Entity Record Deletion Rules

- If a submittal sets the CMEDataStatus on an Inspection to *Deleted*, CERS will perform the following additional deletions automatically:

  o Violations linked to the Inspection will have their CMEDataStatus set to *Deleted*.

  o EnforcementViolations linked to the Inspection's Violations will have their CMEDataStatus set to *Deleted*. This will effectively remove the link between any Enforcements and the Inspection's

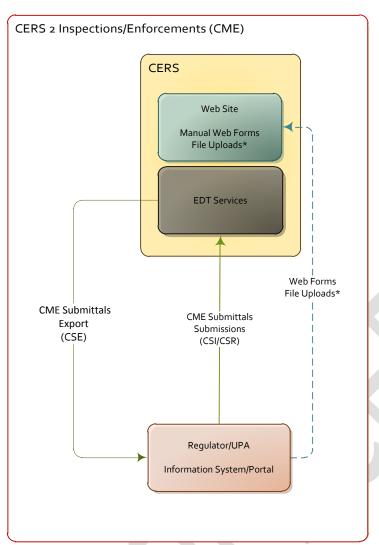Violations. *This action will return a warning message in the XML advising the regulator to review their Enforcement data.*

- If a submittal sets the CMEDataStatus on an Violation to *Deleted*, CERS will perform the following additional deletions automatically:

  o EnforcementViolations linked to the Violation will have their CMEDataStatus set to *Deleted*. This will effectively remove the link between any Enforcements and the Violation. *This action will return a warning message in the XML advising the regulator to review their Enforcement data.*

- If a submittal sets the CMEDataStatus on an Enforcement to *Deleted*, CERS will perform the following additional deletions automatically:

  o EnforcementViolations linked to the Enforcement will have their CMEDataStatus set to *Deleted*.

- If a submittal restores a previously deleted CME entity record by setting the CMEDataStatus to *Approved*, the regulator is responsible for restoring any applicable CME entity child records which would have been automatically deleted by CERS.

CME Submittal Schemas and Conceptual Data Flow

XSD Name	Description	ID
CMESubmittal.xsd	Allows EDT submission of CME records.	CSI
CMESubmittalExport.xsd	Allows Regulators to export previously submitted CME records.	CSE
CMESubmittalsResponse.xsd	Provides results of CME EDT transactions.	CSR

CERS 2 Inspections/Enforcements (CME)

CERS

Web Site

Manual Web Forms
File Uploads*

EDT Services

Web Forms
File Uploads*

CME Submittals
Export
(CSE)

CME Submittals
Submissions
(CSI/CSR)

Regulator/UPA

Information System/Portal

*Flat file uploads (MS Excel, CSV) supported for Inventory and CME data only.

Section 7: Library and Lookup XML Schema's and REST Endpoints

Cal/EPA will offer several REST-based services that allow lookup of key Library and Data Dictionary data. This includes information such as the Violation Library, Chemical Library, Unified Program Data Dictionary, CERS System Fields, and CERS Supplemental Fields.

XML Schemas

The table below lists the XML Schemas applicable to Library/Lookup services.

XSD Name	Description	ID
ChemicalLibraryExport.xsd	Allows download via XML of one or more Chemicals in the CERS Chemical Library.	CLE
ViolationLibraryExport.xsd	Allows download via XML of one or more Violation Types in the CERS Violation Library.	VLE
DictionaryDataExport.xsd	Generic XML Schema that allows download of the various Data Sources defined in CDR for consumers to get information about Data Elements from the various Data Dictionaries used in CERS.	DDE

REST Endpoints

Below is a table of endpoints and XML Schemas allowing download of data necessary to use the EDT endpoints. All endpoints listed in the table below are relative to the base Uri of https://cersservices.calepa.ca.gov/Library/.

Flow Name	Description	End-Point(s)	HTTP Method	XML Schema
Facility Summary	Allows consumer to download a brief summary of a CERS ID (facility name, address, organization code & name, CUPA, Last Submittal Date)	**Facility:** FacilitySummary/[CERSID]	GET	To be determined
Facility Address Search	Returns a list of CERS IDs that matched a "washed" version of the physical/site address provided. Allows searching for duplicate facilities in advance of requesting new CERS facilities/IDs via EDT.	**Address:** AddressSearch/[*to be determined*]	GET	To be determined
Chemical Library	Allows consumers to download the Chemical Library in CERS2.	**All Chemicals:** Chemicals/ **By CAS# or CERSChemicalKey** Chemicals/[*CAS# or CERSChemicalKey*] For example: /Chemicals/389-36-6	GET	CLE
Violation Library	Allows consumers to download the Violation Library in CERS2.	**All:** Violations/ **By ViolationTypeNumber** Violations/[ViolationTypeNumber]	GET	VLE
Unified Program Data Dictionary	Allows consumers to download one or all of the Data Elements.	**All Data Elements:** UPDD/ **By FieldIdentifier or CERSDataRegistryID** UPDD/[*FieldIdentifier* or *CERSDataRegistryID*] For example: UPDD/1a	GET	DDE
CERS System Fields	Allows consumers to	**All Data Elements:**	GET	DDE

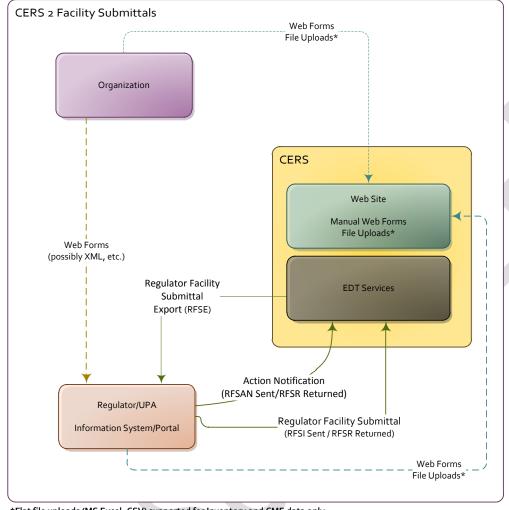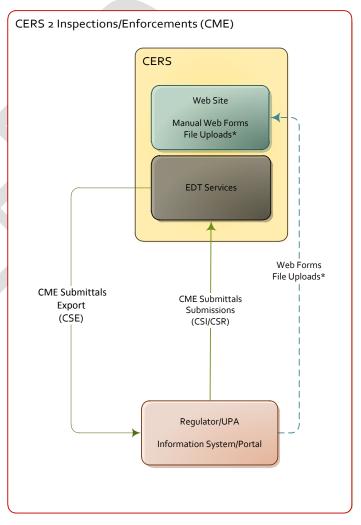|		System/ **By CERSDataRegistryID** System/[*CERSDataRegistryID*] For example: System/20.0070		
download one or all of the Data Elements.				
* CERS Supplemental Fields	Allows consumers to download one or all of the Data Elements.	**All Data Elements:** Supplemental/ **By CERSDataRegistryID** Supplemental/[*CERSDataRegistryID*]	GET	DDE
* Organizations	Allows consumer to query and/or download the list of Organizations managed in CERS	**All Organization's:** Organizations/ **Search By Name or Organization Code:** Organization/Name/[Name] Organization/Code/[Code]	GET	To be determined

*Not Available for Release Candidate 1

A few Critical Lookups Values for EDT Implementers

- CMEDataStatus - https://cersservices.calepa.ca.gov/Library/System/20.0041
- Transaction Status - https://cersservices.calepa.ca.gov/Library/System/20.0082
- Submittal Status - https://cersservices.calepa.ca.gov/Library/System/20.0005

[Note: The test versions of the Library services available from Dec.2011 through May 2012 will be changed to require HTTP header-based authentication.]

Appendix A: CERS High Level Data Flows Diagram

CERS 2 Facility Submittals

Organization

Web Forms
File Uploads*

CERS

Web Site

Manual Web Forms
File Uploads*

EDT Services

Web Forms
(possibly XML, etc.)

Regulator Facility
Submittal
Export (RFSE)

Regulator/UPA

Information System/Portal

Action Notification
(RFSAN Sent/RFSR Returned)

Regulator Facility Submittal
(RFSI Sent / RFSR Returned)

Web Forms
File Uploads*

CERS 2 Inspections/Enforcements (CME)

CERS

Web Site

Manual Web Forms
File Uploads*

EDT Services

CME Submittals
Export
(CSE)

CME Submittals
Submissions
(CSI/CSR)

Web Forms
File Uploads*

Regulator/UPA

Information System/Portal

*Flat file uploads (MS Excel, CSV) supported for Inventory and CME data only.

Legend

———— Machine to Machine Interaction ————   – – – – – Manual Interaction – – – – –   – – – Potential Web Forms/XML Upload – – –

Appendix B: CERS EDT Services Endpoints

Production Base URI: https://cersservices.calepa.ca.gov/EDT/

Testing Base URI: https://cersservices.calepa.ca.gov/EDTTest/ .

Pre-production (and future version) testing URI: https://cersservices.calepa.ca.gov/EDTNext/.

[RegulatorCode] is a placeholder for a regulator's CERS-specified, 4 digit unique identifier assigned to each Regulator using CERS.

[TransactionKey] is a placeholder for the CERS-generated GUID assigned to each successfully received Facility and CME Submittals transaction.

Flow Name	Description	End Point Uri	Accepted Schema	Response Schema	HTTP Method
Regulator Facility Submittal Submissions	Allows regulators to submit Facility Submittals	Regulator/*[RegulatorCode]*/FacilitySubmittal/	RFSI	RFSR	PUT
Regulator Facility Submittal Action Notifications	Allows regulators to submit status updates for existing Facility Submittal Element instances.	Regulator/*[RegulatorCode]*/FacilitySubmittal/ActionNotification/	FSAN	RFSR	PUT
Facility Submittal Status Summary	Allows consumers to get human-readable summary status about a previously submitted transaction.	FacilitySubmittal/Transaction/*[TransactionKey]*/Summary/	N/A	RFSR	GET
Facility Submittal Status Details	Allows consumers to get detailed XML-formatted status and errors, warnings, advisories data about a previously submitted transaction.	FacilitySubmittal/Transaction/*[TransactionKey]*/Details/	N/A	RFSI + EDTAN	GET
Regulator Facility Submittal Export Query	Allows consumers to get Facility Submittals. XML output is generally similar to Regulator Facility Submittal Import schema except for some CERS System Fields.	Regulator/*[RegulatorCode]*/FacilitySubmittal/ ***Query Arguments: StartDateTime**, EndDateTime, SubmittalElementCode, SubmittalElementStatus, CERSID **Example:** Regulator/12345678AA11/FacilitySubmittal/?startDate=1-1-2011&endDate=6-30-2011	N/A	RFSE	GET
CMESubmittals Submissions	Allows Regulators to submit CME data.	Regulator/[RegulatorCode]/CMESubmittal/	CSI	CSR	PUT
CMESubmittals Status Summary	Allows Regulators to get human-readable summary status information about a previously submitted transaction.	CMESubmittal/Transaction/*[TransactionKey]*/Summary/	N/A	CSR	GET
CMESubmittals Status Details	Allows Regulators to get detailed XML-formatted status and errors, warnings, advisories data about a previously submitted transaction.	CMESubmittal/Transaction/*[TransactionKey]*/Details/	N/A	CSR + ???	GET
CMESubmittals Export Query	Allows Regulators to get CME Submittals. XML output is generally identical to the CME Submittal schema except for some CERS System Fields.	Regulator/*[RegulatorCode]*/CMESubmittal/ ***Query Arguments: StartDateTime**, EndDateTime, CERSID, Status Example: Regulator/12345678AA11/CMESubmittals/?startDate=1-1-2011&endDate=6-30-2011	N/A	CSE	GET

*Query arguments are optional, except ones in **bold** are required.

Appendix C: Sample .NET Code to Access Facility Submittal Export Endpoint

```csharp
using System;
using System.Linq;
using System.Text;
using System.Net;
using System.IO;
using System.Xml.Linq;
using System.Security.Cryptography;

namespace CERS.EDTServices.Client
{
    public class FacilitySubmittalImportClient
    {
        public void Submit()
        {
            //Define username & password variables; substitute with valid CERS username & password
            string userName = "[AuthorizedCERSUserName]";
            string password = "[CERSPassword]";

            //Use SHA1 to generate a hash string to put in HTTP Authorization header below.
            SHA1Managed sha1 = new SHA1Managed();

            //Generate hash bytes.
            byte[] hashedPassword = sha1.ComputeHash(Encoding.UTF8.GetBytes(password));

            //Convert the hash bytes to a Base64 string to be sent to the service.
            string hashedPasswordString = Convert.ToBase64String(hashedPassword);

            //Setup and make Web Request.
            HttpWebRequest request = (HttpWebRequest)WebRequest.Create("http://.../Regulator/98761/FacilitySubmittal/");
            request.Method = "PUT";
            request.ContentType = "application/zip";

            //Add Http Authorization header
            request.Headers.Add("Authorization", string.Format("user {0}:{1}", userName, hashedPasswordString));

            //Fill the byte array with your data
            byte[] byteStream = new byte[100];

            //Write data to stream
            request.ContentLength = byteStream.Length;
            using (Stream writer = request.GetRequestStream())
            {
                writer.Write(byteStream, 0, (int)request.ContentLength);
                writer.Flush();
            }

            //Get the response from the service.
            HttpWebResponse httpResponse = (HttpWebResponse)request.GetResponse();
            if (httpResponse.StatusCode != HttpStatusCode.OK)
            {
                //Get the FacilitySubmittalResponse XML data back.
                XElement xmlResponse = XElement.Load(httpResponse.GetResponseStream());
                //Parse xmlResponse and check for status.
            }
        }
    }
}
```

Appendix D: Glossary of CERS Terms   [Incomplete]

Facility Submittal: Consists of the data for a single facility an *Organization* intentionally submitted to CERS (or a regulator's local web portal) to meet their legal reporting requirements for the facility. An *Organization* reporting on their multiple facilities would result in multiple *Facility Submittals*. A *Facility Submittal* consists of one or more *Submittal Elements*.

Submittal Element: A collection of fields defined in the Unified Program Data Dictionary that represents a single stand-alone form, or a group of dependent/related forms, or a collection of other data fields specifying a program reporting activity (e.g. UPCF forms, Inspection and/or Enforcement data) at a specific facility. *Submittal elements* can be approved by separate Regulators, but only one *regulator* per element per facility. This means that if a submittal consisting of three submittal elements were to be sent and two submittal elements pass validation and one doesn't, only the one submittal element would be rejected for the submittal.

A *Transaction* (in CERS EDT) represents a single EDT exchange from an authorized user of CERS EDT services consisting of at least one *Facility Submittal* (or one CME Submittal). Regulator *Transactions* are identified by two UUID/GUID fields: a *RegulatorTransactionKey* provided by the regulator, and a separate *TransactionKey* returned by CERS upon successful receipt of a *Transaction*. If CERS discovers an error anywhere in an EDT transaction, the entire EDT transaction will be rejected.

Regulator: Local or state regulating agency that has authority for one or more *submittal elements* for a specific geographic region. The initial CERS 2 implementation will focus on CUPA's and PA's, but the CERS 2 infrastructure will be designed to support additional programs/regulator types in the future.

Facility: A physical location that is regulated by the one or more regulators in CERS (e.g. CUPAs or PAs). A facility is always associated with only *Organization* at any given point in time.

EDT: See *Electronic Data Transfer*

Electronic Data Transfer: Refers to the process of the exchange of data electronically between two or more parties, in this case Cal/EPA Unified Program, Regulatory Entities (local governments), and Businesses.

CUPA: Certified Unified Program Agency.

PA: A Participating Agency in the Unified Program.

CERS System Fields: A list of data elements used by CERS for electronic data exchange and regulator-to-state reporting that are not defined in the Unified Program Data Dictionary or via Locally Collected Fields. Regulators and organizations performing data exchanges will typically need to provide most of these data fields.

CERS Supplemental Fields: A list of data elements used by CERS that represent "optional" data that may be provided by regulators or business such as geographic data (latitude, longitude, value indicating how accurate provided data is), FRSID, etc.

Technology Services Unit (TSU): Cal/EPA Unified Program Technology Services Unit is responsible for designing, developing, implementing, and maintaining the California Environmental Reporting System (CERS) as well as other key Unified Program technology products.

CERS2 Supplemental Documentation Policies
Prepared by Cal/EPA Unified Program Staff   August 2011 Update

Many of the Unified Program's facility reporting requirements include the need for supplemental documentation beyond the fields defined in the Unified Program Data Dictionary/UPCFs (e.g., facility map, Emergency Response Plan, UST Response Plan, etc.). To support organizations/business providing these mandated documents in some fashion to their local regulators, CERS2 supports organizations either uploading the document(s), or indicating they are meeting the documentation requirements in some other approved fashion. This document summarizes the various options, limitations, and policies regarding supplemental documentation in CERS2. Many of the policies were based upon the goal of minimizing document storage costs for the State of California and Unified Program fee payers. This goal and these policies were adopted by the Unified Program Administration and Advisory Group (UPAAG) and the Unified Program Data Management Steering Committee (DSC).

Unless explicitly stated below, these standards apply to all facility submittals, whether they originate in the CERS2 user interface or in a regulator web portal and are later transmitted to CERS via EDT.

Options for Supplemental Documentation

Organizations can use the following options for providing/reporting their supplemental documentation:
- One or more document uploads. This is the preferred approach.
- Provide a single, non-password protected, publicly-accessible Internet URL which either points directly at the documentation, or points to a web page with readily locatable links to the documentation.
- The CERS ID of a facility where the regulator had previously agreed the documentation could be stored.
- The date the organization last provided the documentation to their local regulator.
- Identification of a one of the other facility's submittal elements which already contains the necessary documentation.
- An explanation of why the organization believes it is exempt from the supplemental documentation requirement.

If the regulator does not approve of the alternate document location or exemption, they would reject the submittal element and direct the business user to resubmit.

File/Data Compression Encouraged

Organizations are strongly encouraged to minimize the file size of their document uploads before they upload them into CERS. Techniques they could use include saving pictures or document scans at lower resolutions (e.g., JPEG, scanned PDFs), and use of ZIP files to compress one or more documents (as long as all zipped documents relate to the specified CERS document upload type (e.g., facility site map).

Maximum Single Document Upload Size	25 MB A single document upload cannot exceed 25 MB. If an organization needs to upload a larger document, they will need to divide it into smaller pieces of <25MB and upload each separately, or use an alternate location option.
Acceptable document file extensions/types	• **Graphics**: .gif, jpeg, jpg, png, svg • **Generic Text**: txt, rtf, htm, html, csv, xml • **Documents**: pdf, doc, docx, xls, xlsx, ppt, odt, ods, pptx, zip Cal/EPA retains the right to reject or delete uploaded documents whose internal format does not match their file extension. Rejection could occur at the time of a document submittal, or may occur post-submittal, in which case the entire submittal element will automatically be found deficient by Cal/EPA and will need to be resubmitted.
Locally-Required Document Uploads	CERS2 will include the ability for an organization to upload one or more locally-required documents specific to a submittal element (e.g., UST, Business Plan, etc.) as requested/required by their local regulator(s). Local regulators should minimize the size and count of any locally-required document uploads.
"Malicious" Files	Organizations are responsible for ensuring their document uploads do not contain viruses or other malicious elements. Cal/EPA retains the right to reject or delete "malicious" uploaded documents. Rejection could occur at the time of a document submittal, or may occur post-submittal. Cal/EPA will NOT guarantee organizations or regulators users will be alerted when malicious files are deleted post-submittal.
Non-Mandated Documents Uploads Not Supported	CERS2 will only support document uploads for the **specific** documents that must or might be potentially reportable for a facility. This will include support for uploading locally-required document uploads. However, CERS2 is not intended as a repository of non-mandated documents for organizations OR regulators.
Automated Modification of Document Upload Format	To reduce storage costs, Cal/EPA reserves the right to modify the size or format of an original document upload providing the modification does not change the actual content. Techniques Cal/EPA may employ could include compressing documents into ZIP files, reducing the resolution of very high-resolution pictures, and or changing the file format of a document upload to a more space-efficient format.
Maximum Total Size for EDT Transaction	Cal/EPA will communicate to EDT clients the upper limit on the total size of large EDT transactions, which would need to be submitted in ZIP file format. If a regulator web portal received a very large facility submittal with multiple large submittal elements (e.g., a large chemical inventory and a submittal element with one or more large document uploads), the regulator might potentially need to send the large submittal elements as separate EDT transactions.

Appendix F: CERS2 Submittal Elements

The table below shows the *Submittal Elements* used in CERS2. Each *Submittal Element* can be submitted by organizations and reviewed by regulator independently of each other, except for the *Facility Information Submittal Element*, which must accompany all other submittal elements. To ensure emergency responders have current information and ensure the overall smooth operation of statewide electronic reporting, regulators will need to review *Facility Information Submittal Element* within 15 days of being submitted and set their status to "Accepted" or "Not Accepted" (or "Not Applicable" in rare circumstances).

CERS2 Submittal Element	UP Program Element
Facility Information [always managed by the CUPA] • **Business Activities (UPCF)** • **Owner/Operator Identification (UPCF)** • Locally-Required Document(s)	Business Plan
Hazardous Materials Inventory • **Inventory: 1+ Chemical Description (UPCF)** • Site Map (Official Use Only) • Locally-Required Document(s)	Business Plan
Emergency Response & Training Plans • Emergency Response/Contingency Plan • Employee Training Plan • Locally-Required Document(s)	Business Plan
Underground Storage Tanks • **UST Operating Permit Application: Facility Information (UPCF)** • **UST Operating Permit Application: Tank Information (UPCF)** • **UST Monitoring Plan (UPCF)** • **UST Certification of Installation/Modification (UPCF)** • UST Monitoring Site Plan • UST Certification of Financial Responsibility • UST Response Plan • UST Owner and UST Operator: Written Agreement • UST Letter from the Chief Financial Officer • Owner Statement of Designated UST Operator Compliance • Locally-Required Document(s)	UST

Onsite Hazardous Waste Treatment Notification • **Onsite Hazardous Waste Treatment Notification: Facility (UPCF)** • **Onsite Hazardous Waste Treatment Notification: Unit (UPCF)** • **Tiered Permitting Unit: Permit By Rule (PBR) (UPCF)** • **Tiered Permitting Unit: Conditionally Authorized (CA) (UPCF)** • **Tiered Permitting Unit: Conditionally Exempt-Specified Waste Streams (CESW) (UPCF)** • **Tiered Permitting Unit: Conditionally Exempt-Small Quantity Treatment (CESQT) (UPCF)** • **Tiered Permitting Unit: Conditionally Exempt - Limited (CEL) (UPCF)** • Tiered Permitting Unit: Prior Enforcement History • Tiered Permitting Unit: Tank and Container Certification • Tiered Permitting Unit: Notification of Local Agency or Agencies • Tiered Permitting Unit: Notification of Property Owner • **Certification of Financial Assurance (UPCF)** • Onsite Hazardous Waste Treatment: Written Estimate of Closure Costs • Financial Assurance Closure Mechanism • Onsite Hazardous Waste Treatment Plot Plan/Map • Locally-Required Document(s)	Hazardous Waste
Recyclable Materials Report • Recyclable Materials Report Documentation • Locally-Required Document(s)	Hazardous Waste
Remote Waste Consolidation Annual Notification • **Remote Waste Consolidation Site Annual Notification (UPCF)** • Locally-Required Document(s)	Hazardous Waste
Hazardous Waste Tank Closure Certification • Hazardous Waste Tank Closure Certification [implemented as document, not a UPCF] • Locally-Required Document(s)	Hazardous Waste
Aboveground Petroleum Storage Tanks • Aboveground Petroleum Storage Tank Documentation • Locally-Required Document(s)	APSA

Appendix G: Facility Regulator Status

In CERS2, there are a series of statuses indicating if a specific facility is currently regulated for a specific submittal element (which can then be mapped to one of the 6 UP elements). These statuses reflect the current status of a facility→submittal element as reported by the facility's organization and/or overridden by the appropriate regulator for that facility→submittal element. Shown below is a mockup of how a regulator can view and manage these statuses in the CERS2 UI.

Be default a new facility will have all of its submittal elements (except Facility Information) marked as "Not Applicable", meaning the facility or its regulator has not indicated they are regulated. Once a facility completes their Business Activities form, additional submittal elements will be marked as "Applicable" based on the answers they provide to fields #4-#14b. EDT submittal of a Facility Information Submittal Element will similarly set additional elements. An authorized regulator can always access the page below and override the default status. For example, if the regulator changes the status to "Always Applicable", the facility will always be prompted to complete that submittal element in the CERS UI. If the regulator set's the status to "Not Applicable", the facility will not be prompted for that submittal element in the future (although the organization could submit it in the future if they choose to).

Cal/EPA anticipates implementing management of this data as a separate EDT service at some point in the future, but initially, the setting of these fields will only occur via the automatic processes described in this appendix or a regulator signing in to the CERS Regulator portal and directly changing the status.

CERS Regulator Portal: Reporting Requirements Screen

Not Applicable: Facility has NOT reported data for this element in its last/recent submittals. Regulator can also set this value to reduce warnings/reminders/alerts to the business (e.g., business is exempt). This status will also be automatically set if a regulator reviews a submittal element and sets its **Submittal Status** to *Not Applicable*. This will ensure the business is not advised/warned to submit the submittal element in the future.

Applicable: Facility has reported data for this element in its last/recent submittals. The regulator can also set this flag to ensure the business is advised/warned to submit this element in its next submittal.

Always Applicable: This is an OPTIONAL setting regulators can use if they wish to ensure a business is ALWAYS prompted/warned to report data for this submittal element. Once set, only the regulator can un-set it.

If a regulator determines a business has closed or changed operations such that it is no longer regulated under the Unified Program, then they should ensure all submittal elements are set to ***Not Applicable***.

CERS2 will include reports in the Regulator portal showing counts of facilities by program element that have at least one submittal element shown as ***Applicable*** or ***Always Applicable***.

Appendix H: Submittal Element Assignment

Slides from the Aug.16, 2011 CERS Regulator User Group

The "Change CUPA" Page in CERS UI for managing a Facility's Submittal Element→Regulator mappings

Report in CERS UI for viewing ZIP Code→Submittal Element→Regulator Mappings

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[i] Per RCRAInfo Data Exchange Template v5.2, Edit Number CEI-020
[ii] Per RCRAInfo Data Exchange Template v5.2, Edit Number CE4-050

[iii] Per RCRAInfo Data Exchange Template v5.2, Edit Number CE4-060
[iv] Per RCRAInfo Data Exchange Template v5.2, Edit Number CE4-090
[v] Per RCRAInfo Data Exchange Template v5.2, Edit Number CE4-080
[vi] Per RCRAInfo Data Exchange Template v5.2, Edit Number CE8-050